

# water quantity

## data needed to assess resources

A comprehensive assessment of our water resources is a key step in properly managing water supplies for the long term. Such an assessment requires significant amounts of information. This information needs to be analyzed and applied using methods that model and predict the response of water sources to water withdrawals. It also needs to be accessible and useable by many public and private sector users. But before such data analysis and accessibility can occur, the information needs to be collected and compiled into useable databases and formats.

### What do we need to characterize our water resources?

For groundwater, much of our information comes from water supply wells. Wells are windows into the underground world of groundwater and aquifers. Wells provide answers to key questions such as:

- *What are the geologic materials the well penetrated?* Study and description of the materials collected during drilling provide details on the underground strata that form the “plumbing system” for groundwater. It tells us which strata transmit water and which are barriers.
- *What was the original water level in unpumped wells?* How have these “static” water levels changed through time? Do they vary seasonally? This information characterizes the volume of water stored in the source aquifer.
- *How much water does the well produce, and how much does the water level drop during pumping?* What effect does the pumping have on other wells? This information tells about the aquifers’ ability to transmit water.

- *What amount of pumping has occurred for a given well?* Long-term use trends are an important part of the sustainability question.

- What is the quality of the water the well originally produced? Has the quality changed through time? Are there natural or societal impairments? Is the quality good enough for various uses?

Combining geologic, water level, pumping rates, quality and other information from many wells “three-dimensionally” is step one in characterizing our groundwater, and moving towards predictive capabilities to assure sustainable supplies. While some parts of this information base are in place, the information has become dated and incomplete, and needs updating. Significant information on water levels and pumping effects exists but needs compilation. Geologic materials from numerous wells are likewise archived, but need study and description.

Information for characterizing streams and lakes is supplied largely by gauges that measure stream flow continuously. There are about 130 such gauges in Iowa, scattered across 56,000 square miles of watersheds containing 72,000 miles of streams. These gauges are paid for by various entities for different purposes; 25 are funded by the DNR. Additional gauges are needed to properly describe stream flow characteristics, particularly the critical low flows that are the “bottom line” for water withdrawals from streams. Stream flow rates are also needed to assess the potential for water supply reservoirs and properly understand the quality of our surface waters, as quality is highly dependent on flow conditions.

Proper compilation of this “raw” geologic, hydrologic and water quality information is step one in assessing our water resource base.



For more information:  
Bob Libra, State Geologist, at (319) 335-1585 or [Robert.Libra@dnr.state.ia.us](mailto:Robert.Libra@dnr.state.ia.us)  
[www.iowadnr.gov/water/quantity.html](http://www.iowadnr.gov/water/quantity.html)